RoHS Compliant

This product complies with the Restriction of certain Hazardous Substances (RoHS) Directive as conceived by the European Union committee in 2002. Products that meet the RoHS standard have been redesigned to remove the lead, mercury, cadmium, hexavalent chromium where applicable. As part of our efforts to maintain a healthy environment, Para Systems has proactively adopted these standards for our Minuteman® brand products.

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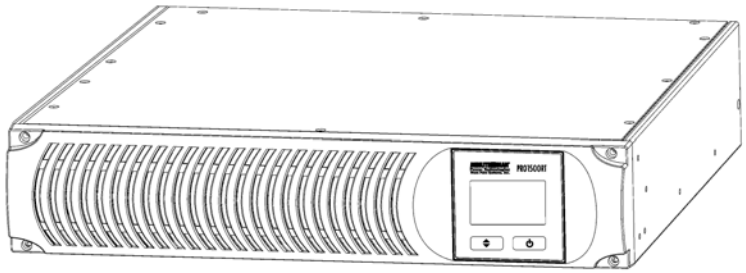
MINUTEMAN®
Power Technologies
From Para Systems, Inc.

PRO Rack/Tower Series UPS

User's Manual



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English

1 INTRODUCTION

Thank you for purchasing this power protection product. It has been designed and manufactured to provide many years of trouble free service.

IMPORTANT SAFETY INSTRUCTIONS
SAVE THESE INSTRUCTIONS !

Please read this manual before installing your PRO Rack/Tower Series UPS, models PRO1000RT, PRO1500RT as it provides important information that should be followed during installation and maintenance of the UPS and batteries allowing you to correctly set up your system for the maximum safety and performance. Included is information on customer support and factory service if it is required. If you experience a problem with the UPS please refer to the Troubleshooting guide in this manual to correct the problem or collect enough information so that the Technical Support Department can rapidly assist you.

This symbol indicates "ATTENTION"

This symbol indicates "Risk of Electrical Shock"

This symbol indicates "Alternating Current Supply Phase"

This symbol indicates "Alternating Current Supply"

English

This symbol indicates "Direct Current Supply"

This symbol indicates "Equipment Grounding Conductor"

CAUTION! Connect the UPS to a two pole, three wire grounding AC wall outlet. The receptacle must be connected to the appropriate branch protection (circuit breaker or fuse). Connection to any other type of receptacle may result in a shock hazard and violate local electrical codes. Do not use extension cords, adapter plugs, or surge strips.

CAUTION! To reduce the risk of fire, connect only to a circuit provided with 20 amperes maximum branch circuit over-current protection in accordance with the National Electric Code, ANSI/NFPA 70.

CAUTION! To reduce the risk of electrical shock with the installation of this UPS equipment and the connected equipment, the user must ensure that the combined sum of the AC leakage current does not exceed 3.5mA.

CAUTION! To reduce the risk of electrical shock in conditions where the load equipment grounding cannot be verified, disconnect the UPS from the AC wall outlet before installing a computer interface cable. Reconnect the power cord only after all signaling connections are made.

WARNING: This Uninterruptible Power Supply contains potentially hazardous voltages. Do not attempt to disassemble the UPS beyond the battery replacement procedure. This UPS contains no user serviceable parts. Repairs and Battery replacement must be performed by **QUALIFIED SERVICE PERSONNEL ONLY.**

WARNING: Risk of Electrical Shock. Hazardous live parts inside these power supplies are energized from the battery even when the AC input is disconnected.

CAUTION! To de-energize the outputs of the UPS:

1. If the UPS is on press and release the On/Off/Test Button.
2. Disconnect the UPS from the AC wall outlet.
3. To de-energize the UPS completely, disconnect the battery.

CAUTION! This UPS series is intended to be install in an indoor temperature controlled environment that is free of conductive contaminants.

CAUTION! The Maximum ambient operating temperature for this UPS series is 40°C (“0 ~ 40°C” for Ambient Operation).

ON / OFF / TEST BUTTON: To turn the UPS on: press and hold the On/Off/Test Button until the alarm sounds one beep and then release. The UPS will perform a five second self-test. Once the UPS has passed its self-test the UPS will provide an output and the load will be powered. To turn the UPS off: press and hold the On/Off/Test Button until the alarm sounds one beep and then release. To perform a ten-second battery test: With the UPS in the AC mode, press and hold the On/Off/Test Button until the alarm sounds four beeps, and then release. During the test, the UPS will switch to the Battery mode, the On-Battery icon will illuminate and the alarm will sound.

NOTICE! The output of this device is not sinusoidal. It has a total harmonic distortion and maximum single harmonic as below:

PRO1000RT	Total harmonic 57.2%	Single harmonic 46.1%
PRO1500RT	Total harmonic 42.8%	Single harmonic 26.6%

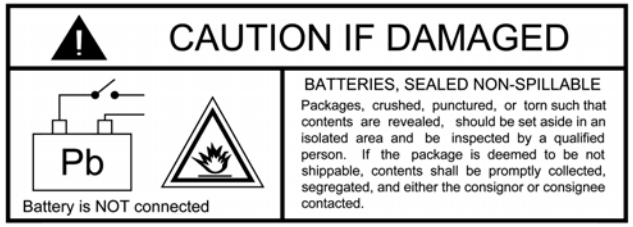
NOTICE: This equipment has been tested and found to comply with the limits for a Class B computing device in accordance with the specifications in Subpart J of Part 15 of FCC Rules and the Class B limits for radio noise emissions from digital apparatus set out in the Radio Interference of the Canadian Department of Communications. These limits are designed to provide reasonable protection against such interference in a residential installation. This equipment generates and uses radio frequency and if not installed and used properly, that is, in strict accordance with the manufacturer's instructions, this equipment may cause interference to radio and television reception. If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Re-orient the receiving antenna.
- Relocate the computer with respect to the receiver.
- Move the computer away from the receiver.
- Plug the computer into a different outlet so that the computer and receiver are on different branch circuits.
- Shielded communications interface cables must be used with this product.

WARNING: Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Receiving Inspection

After removing your UPS from its carton, it should be inspected for damage that may have occurred in shipping. Immediately notify the carrier and place of purchase if any damage is found. Warranty claims for damage caused by the carrier will not be honored. The packing materials that your UPS was shipped in are carefully designed to minimize any shipping damage. In the unlikely case that the UPS needs to be returned to the manufacturer, please use the original packing material. Since the manufacturer is not responsible for shipping damage incurred when the system is returned, the original packing material is inexpensive insurance. **PLEASE SAVE THE PACKING MATERIALS!**


CAUTION IF DAMAGED
Pb
Battery is NOT connected
BATTERIES, SEALED NON-SPILLABLE
Packages, crushed, punctured, or torn such that contents are revealed, should be set aside in an isolated area and be inspected by a qualified person. If the package is deemed to be not shippable, contents shall be promptly collected, segregated, and either the consignor or consignee contacted.

NOTE: These UPSs are shipped with the batteries disconnected. The batteries must be connected before putting these UPSs into service. Refer to Section 3 "Installation" for connecting the batteries.

Life Support Policy

As a general policy, we do not recommend the use of any of our products in life support applications where failure or malfunction of the product can be reasonably expected to cause failure of the life support device or to significantly affect its safety or effectiveness. We do not recommend the use of any of our products in direct patient care. We will not knowingly sell our products for use in such applications unless it receives in writing assurances satisfactory to us that (a) the risks of injury or damage have been minimized, (b) the customer assumes all such risks, and (c) our liability is adequately protected under the circumstances.

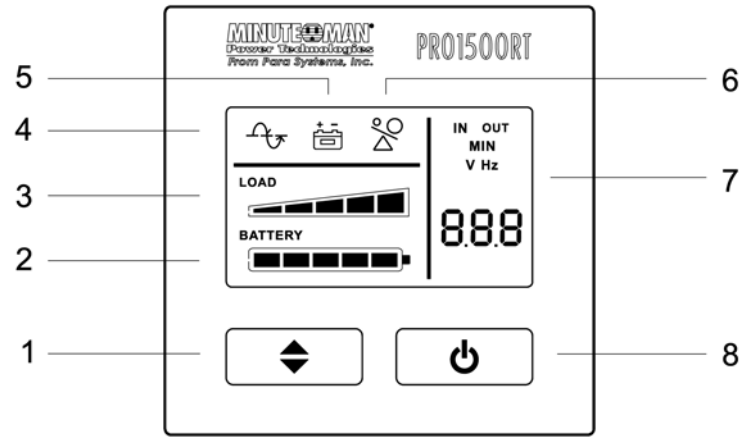
Examples of devices considered to be life support devices are neonatal oxygen analyzers, nerve stimulators (whether used for anesthesia, pain relief, or other purposes), auto transfusion devices, blood pumps, defibrillators, arrhythmia detectors and alarms, pacemakers, hemodialysis systems, peritoneal dialysis systems, neonatal ventilator incubators, ventilators for both adults and infants, anesthesia ventilators, and infusion pumps as well as any other devices designated as “critical” by the United States FDA.

Hospital grade wiring devices and leakage current may be ordered as options on many of our UPS systems. We do not claim that units with this modification are certified or listed as Hospital Grade by us or any other organization. Therefore, these units do not meet the requirements for use in direct patient care.

English

2 CONTROLS AND INDICATORS

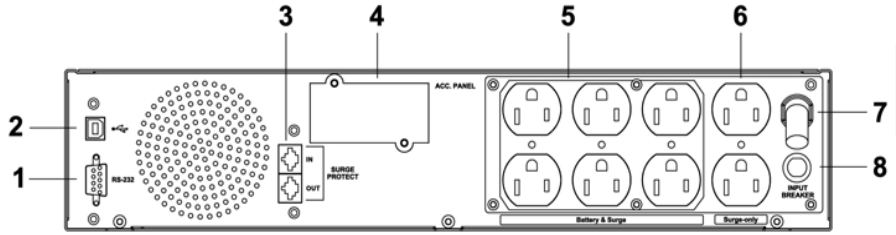
CONTROL PANEL



1. Scroll Button: To scroll through the UPS parameters.
2. Battery Capacity Bar Graph: Displays the amount of Battery Capacity available in the AC and Battery mode.
3. Load Capacity Bar Graph: Displays the amount of load connected to the UPS in the AC and Battery mode.
4. AC normal and Boost/Buck mode Icon: Illuminates when the UPS is in the AC normal mode and flashs when the UPS is in the Boost or the Buck mode.
5. On-Battery Icon: Illuminates when the UPS is operating in the Battery mode.
6. Overload Icon: Illuminates when the amount of load attached to the UPS exceeds its power rating,
7. UPS Parameters and Error codes:
   Input - Voltage and Frequency.
   Output - Voltage and Frequency.
   Estimated Runtime (minutes) - AC normal and Battery mode.
   S.L.F - A site wiring fault has been detected.
   FAL - An internal fault has been detected.
8. On/Off/Test Button: To turn the UPS On/Off and to perform a ten-second battery test.

English

REAR PANEL



1. RS232 Comminucations Port is for UPS monitoring and control.
2. USB Communications Port is for UPS monitoring and control.
3. The RJ11/45 are used for phone/fax/modem and network protection.
4. Accessory Slot is for option cards.
5. Battery Backup & Surge output receptacles for mission critical equipment.
6. Surge ONLY output receptacles for non-critical equipment.
7. Input power cord is for connecting to the Utility Power.
8. Input circuit breaker is for protection against an excessive overload.

Model #	Input Power Plug	Output Power Receptacles
PRO1000RT PRO1500RT	NEMA 5-15P W/10 ft cord	6-NEMA 5-15R Battery Backup & Surge 2-NEMA 5-15R Surge Only

3 INSTALLATION

INSTALLATION PLACEMENT

This UPS series is intended to be install in an indoor temperature controlled environment that is free of conductive contaminants. DO NOT operate the UPS in: extremely dusty and/or unclean areas, locations near heating devices, water or excessive humidity, or where the UPS is exposed to direct sunlight. Select a location, which will provide good air circulation for the UPS at all times. Route power cords so they cannot be walked on or damaged. Typical battery life is 3 to 5 years. Environmental factors do affect battery life. High temperatures, poor utility power, and frequent, short duration discharges have a negative impact on battery life.

INSTALLATION

Be sure to read the installation placement and all the cautions before installing the UPS. Place the UPS in the final desired location and complete the rest of the installation procedure. These UPSs are shipped with the internal batteries disconnected. The batteries must be connected before putting these UPSs into service. See the Connecting The Batteries procedure to connect the batteries.

CONNECTING THE BATTERIES

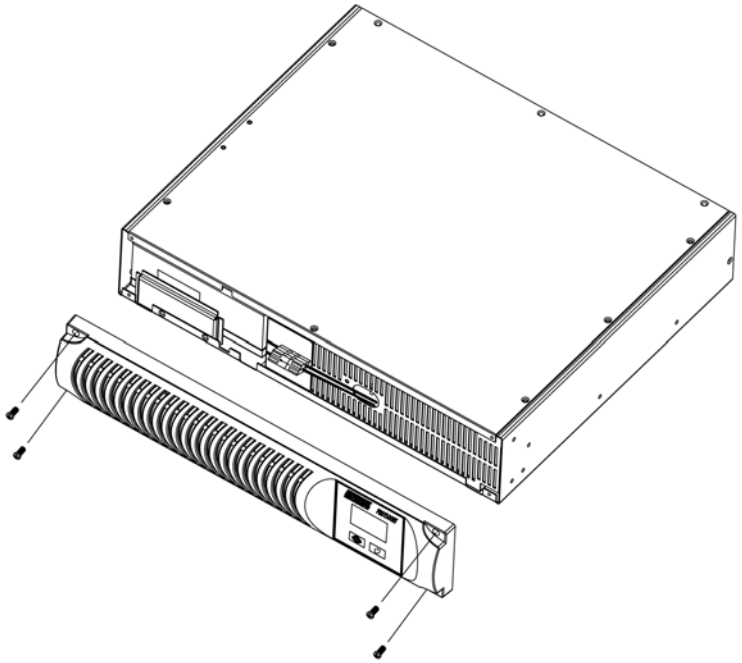
(QUALIFIED SERVICE PERSONNEL ONLY)

Please read all of the **WARNINGS** and **CAUTIONS** before attempting to connect the batteries.

1. Remove the UPS from the shipping box and set on the floor or a bench top.
2. Remove the front panel retaining screws.
3. Lay the front panel on top of the UPS.
4. Verify proper polarity. Connect the battery connectors (red and black) together.

NOTE: Some sparking might occur, this is normal.

5. Re-install the front panel onto the UPS.
6. Re-install the front panel retaining screws.
7. Continue with the rest of the Installation.



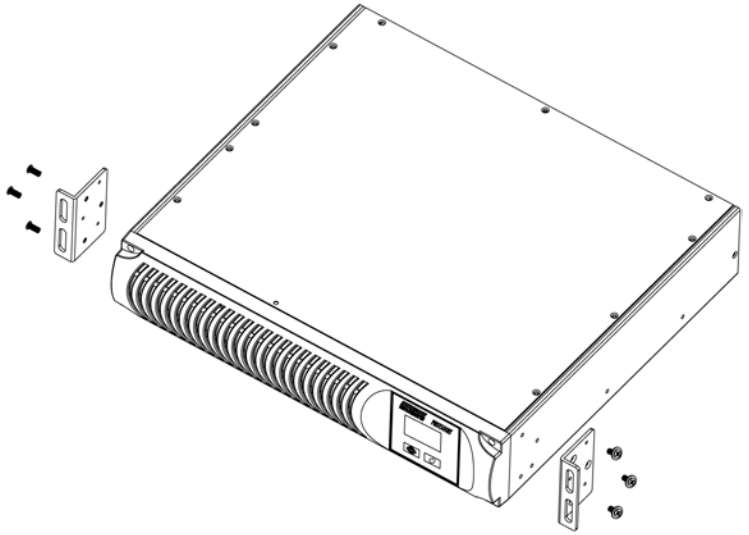
RACKMOUNT CONFIGURATION

This UPS comes with mounting brackets for the standard 19" (46.5cm) rack. The mounting brackets to fit a 23" (59.2cm) standard rack are also available. The screws for mounting the UPS to the rack are not included (screw size varies with rack size).

1. Locate the mounting bracket screw holes on the side panels of the UPS, at the front of the UPS. **NOTE:** The mounting brackets can also be mounted in the middle of the UPS.
2. Align the mounting bracket with the mounting bracket screw holes.
3. Attach the mounting bracket with the retaining screws.
4. Mount the UPS into the rack and secure with the retaining screws.

WARNING: Use two or more people when installing the UPS. Use **CAUTION**, the UPS is extremely heavy. Do not move the rack after the units have been installed. The rack may be unstable due to the weight distribution.

5. The Rackmount Configuration is complete. See Connecting your Equipment



TOWER CONFIGURATION

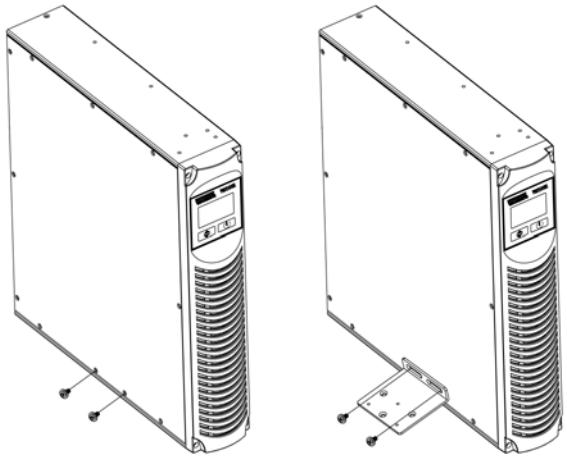
The tower configuration allows the user to install the UPS in the up-right position next to the tower computer. The tower brackets are provided with the UPS.

WARNING: Use two or more people when installing the UPS. Use **CAUTION,** the UPS is extremely heavy.

1. Once the location of the UPS has been determined, place the tower brackets in the desired location.

WARNING: The UPS must be installed in the proper up-right position. If the UPS is not installed in the proper up-right position the Batteries will be damaged. Once the UPS is placed in the tower position, looking at the front panel the YELLOW Battery disconnected label on the top cover of the UPS MUST be on your left hand side.

2. The LCD face plate can be rotated to read in the up-right position. Remove the front panel from the UPS. On the backside of the front panel, push the LCD face plate outwards the face plate will pop out. Position the LCD face plate so that it reads in the up-right position. Re-install the front panel on the UPS.
3. The two rackmount brackets are used for the two tower brackets. Remove the retaining screws and attached the tower brackets as shown. The tower brackets go on both sides of the UPS. Make sure that the UPS is stable.
4. The Tower Configuration is complete. See Connecting your Equipment.



WALLMOUNT CONFIGURATION

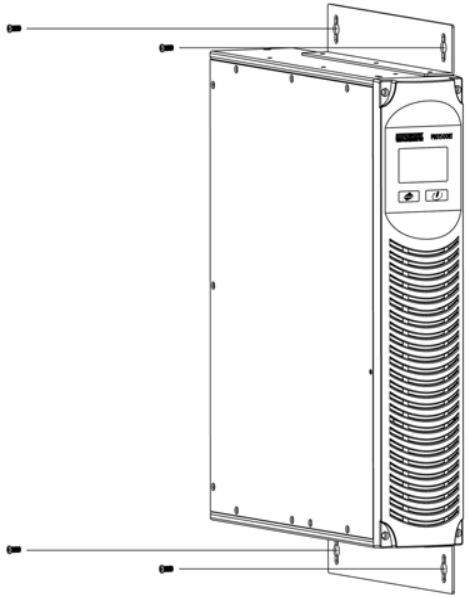
The wallmount configuration allows the user to mount the UPS on the wall. There is a wallmount bracket kit available for the UPS. The kit includes two wall mounting brackets, ten retaining screws, and the wallmount template. **WARNING:** Use two or more people when installing the UPS. Use **CAUTION,** the UPS is extremely heavy. The UPS's side panels have mounting bracket screw holes for attaching the wall mounting brackets.

1. Once the location and position of the UPS has been determined, lay the UPS down flat.

WARNING: The UPS must be installed in the proper up-right position. If the UPS is not installed in the proper up-right position the Batteries will be damaged. Once the UPS is placed on the wall, looking at the front panel the YELLOW Battery disconnected label on the top cover of the UPS MUST be on your left hand side.

2. Align the mounting brackets with the mounting bracket screw holes and attach with the six retaining screws.
3. The LCD face plate can be rotated to read in the up-right position. Remove the front panel from the UPS. On the backside of the front panel, push the LCD face plate outwards the face plate will pop out. Position the LCD face plate so that it reads in the up-right position. Re-install the front panel on the UPS.

4. Use the template to mark the screw hole position on the wall. **CAUTION,** you should always were protective gear for your hands and eyes when operating power tools.
5. Attach the four retaining screws to the wall and make sure that all of the retaining screws are screwed into structural material. Then clean the area of any loose material. Do not tighten the retaining screws all the way, leave approximately 3/8" of the retaining screws sticking out.
6. Position the UPS, so that the mounting bracket keyed holes line up with the four retaining screws. Slide the UPS down until its resting securely on the four retaining screws.
7. Tighten the four retaining screws to secure the UPS to the wall.
8. The Wallmount Configuration is complete. See Connecting your Equipment.



CONNECTING YOUR EQUIPMENT

Plug the mission critical equipment into the Battery Backup & Surge output receptacles on the rear panel of the UPS. Plug the non-critical equipment into the Surge Only output receptacles on the rear panel of the UPS. Ensure that the connected equipment does not exceed the maximum output rating of the UPS (refer to the information label on the UPS or the electrical specifications in this manual). DO NOT PLUG EXTENSION CORDS, ADAPTER PLUGS, SURGE STRIPS OR POWER STRIPS INTO THE OUTPUT RECEPTACLES OF THE UPS. **NOTE:** Risk of damaging the UPS and/or connected equipment.

CAUTION! DO NOT connect a laser printer to the output of the UPS.

CONNECTING THE UPS TO AN AC SOURCE

CAUTION **-** To reduce the risk of fire, connect only to a circuit provided with 20 amperes maximum branch circuit over-current protection in accordance with the National Electric Code, ANSI/NFPA 70. Plug the UPS into a two pole, three wire, grounded receptacle only. DO NOT PLUG THE UPS INTO EXTENSION CORDS, ADAPTER PLUGS, SURGE STRIPS OR POWER STRIPS. DO NOT CUT THE INPUT PLUG OFF AND ATTEMPT TO HARDWIRE THIS UPS, DOING SO WILL VOID THE WARRANTY.

CHECKING THE SITE WIRING FAULT

After plugging the UPS into the wall outlet, check the LCD screen on the front panel of the UPS for a Site Wiring Fault (S.L.F). If the S.L.F is illuminated, the UPS is plugged into an improperly wired wall outlet. If the UPS indicates a Site Wiring Fault (S.L.F), have a Qualified Electrician correct the problem.

CHARGING THE BATTERY

The UPS will charge the internal batteries whenever the UPS is connected to an AC source and there is an acceptable AC voltage present (90 - 150VAC). It is recommended that the UPS's batteries be charged for a minimum of 4 hours before use. The UPS may be used immediately, however, the “On Battery” runtime may be less than normally expected. Typical battery life is 3 to 5 years. Environmental factors do affect battery life. High temperatures, poor utility power, and frequent, short duration discharges have a negative impact on battery life. **NOTE:** If the UPS is going to be out of service or stored for a prolonged period of time, the batteries must be recharged for at least twenty-four hours every ninety days.

COMMUNICATIONS PORT CONNECTION (OPTIONAL)

The power monitoring software and interface cables can be used with the UPS. Use only the interface cables that come with these UPSs. Connect the interface cable (Serial or USB) to the appropriate communications port on the rear panel of the UPS. Connect the other end of the cable to the device that will be monitoring/controlling the UPS. **NOTE:** Connecting to the Communications Port is optional. The UPS works properly without this connection.

ACCESSORY SLOT (OPTIONAL)

The Accessory slot on the rear panel of the UPS is for an SNMP Card or a Dry Contact Relay card. Contact your local dealer for the available option cards. **NOTE:** Connecting to the Communications Port is optional. The UPS works properly without this connection.

NETWORK/PHONE/FAX/MODEM PROTECTION CONNECTION (OPTIONAL)

Connect a 10/100 Base-T network, single line phone, Fax or Modem line to the RJ11/45 modular connectors on the rear panel of the UPS. This connection will require another length of telephone or network cable. The cable coming from the telephone service or networked system is connected to the port marked “IN”. The equipment to be protected is connected to the port marked "OUT". **NOTE:** Connecting to the Network/Phone/Fax/Modem modular connectors is optional. The UPS works properly without this connection.

CAUTION! The TNV connector shall use the same type of RJ45.

4 OPERATION

SYSTEM OVERVIEW

This Line-Interactive UPS protects computers, servers, telecom systems, VoIP systems, security systems, and a variety of electronic equipment from blackouts, brownouts, overvoltages, and surges. The AVR function continuously corrects the voltages, in-between the brownout and overvoltage transfer points (90 - 150VAC), to a safe usable level. When the UPS is operating in the AVR mode the audible alarm will remain silent and the AC normal mode indicator will blink. During normal AC operation, the UPS will quietly and confidently protect your system from power anomalies.

The UPS will charge the batteries with the UPS in the on or off position when the UPS is plugged into the wall outlet and there is an acceptable AC voltage present (90 - 150VAC). When a blackout, brownout, or an overvoltage condition occurs; the UPS will transfer to the battery mode, the On Battery indicator will illuminate and the audible alarm will sound once every five seconds indicating that the commercial power is lost or unacceptable. When the commercial power returns or is at an acceptable level, the UPS will automatically transfer back to the AC normal mode and start recharging the batteries. During an extended outage when there is approximately two minutes of backup time remaining the audible alarm will sound twice every five seconds. This Low Battery Warning is informing the user that they should save all open files and turn off their computer. When the batteries reach the predetermined level the UPS will automatically shutdown protecting the batteries from over discharging. Once the commercial power returns the UPS will automatically restart, providing safe usable power to the connected equipment and start recharging the batteries.

TURNING THE UPS ON / OFF

To turn the UPS on: press and hold the On/Off/Test Button until the alarm sounds one beep and then release. The UPS will perform a five second internal self-test. Once the UPS has passed its internal self-test the UPS will provide an output and the load will be powered. To turn the UPS off: press and hold the On/Off/Test Button until the alarm sounds one beep and then release.

TEST BUTTON

To perform a ten-second user invoked battery test: With the UPS in the AC normal mode, press and hold the On/Off/Test Button until the alarm sounds four beeps, and then release. During the test, the UPS will switch to the Battery mode, the On-Battery icon will illuminate and the alarm will sound.

SCROLL BUTTON

Press the Scroll Button to scroll through the UPS parameters. The UPS parameters are displayed on the LCD screen.

LCD SCREEN

The LCD provides the user with a variety of useful information. The LCD has a real-time meter to display, in numeric fashion, the following data:

- Input Voltage and Frequency
- Output Voltage and Frequency
- Connected Load Capacity
- Battery Capacity
- Estimated runtime in the AC and DC mode

The LCD will include dedicated icons for the following information:

- AC Normal
- On Battery
- AVR Mode (Boost and Buck) – The AC Normal icon will flash
- Overload
- Weak/Bad Battery (Battery Capacity Bar Graph will flash)
- Site Wiring Fault (S.L.F. will be displayed)
- UPS Fault (FAL will be displayed)

The LCD does have a backlight that will turn on when the UPS is turned on. After approximately 20-seconds the backlight will turn off to conserve energy. When an event (alarm) occurs, such as going to the battery mode, the backlight will turn on for approximately 20-seconds to alert the user that an event has occurred and then the backlight will turn off. While the Scroll button is in use the backlight will remain on. Approximately 20-seconds after the Scroll button has stopped being used the backlight will turn off to conserve energy.

SELF-TEST

The self-test feature is useful to verify the correct operation of the UPS and the condition of the batteries. The length of the test that is automatically performed every two weeks is longer than the start-up or user invoked test. This every two week test will run for approximately fifteen-seconds to measure the battery's capability to support the output load. The start-up and user invoked test will run for approximately ten-seconds. If the UPS fails one of these tests, one of the icons or the information displayed on the LCD will remain illuminated indicating the type of problem. **NOTE:** The UPS will automatically perform a self-test on start-up and every two weeks.

RS232 COMMUNICATIONS PORT

The power monitoring software and interface cables can be used with the UPS. Use only the interface cables that come with these UPSs. The RS232 communication port is a standard DB9 female with both RS232 and simulated contact closure capability. The pinout for the port is depicted per the chart below:

Pin 1: Simulated contact closure Low Battery Warning, NO
Pin 2: /TXD
Pin 3: /RXD and receive UPS shutdown command (connect a minimum of +5VDC to a maximum of +12VDC for 4-seconds to completely shutdown the UPS. The shutdown command is ONLY active in the battery mode)
Pin 5: Ground
Pin 8: Simulated contact closure AC fail, NO
Pins 4, 6, 7, 9: Not Used

ACCESSORY SLOT

The Accessory slot on the rear panel of the UPS is for an SNMP Card or a Dry Contact Relay card. Contact your local dealer for the available option cards.

USB COMMUNICATIONS PORT

This UPS series supports USB communications. Use the interface cable that comes with the UPS. The USB communications protocol is HID. The HID USB driver comes standard in the Windows OS. Simply plug the USB cable into the UPS and the computer then follow the prompts on the screen.

POWER MONITORING SOFTWARE

The UPS comes with power monitoring software. See the software CD for the installation of the power monitoring software.

ALARMS

ON BATTERY

When the UPS is operating on the batteries, the AC normal icon will extinguish, the On-Battery icon will illuminate and the alarm will sound one beep every five seconds. Once the UPS returns to the normal AC mode, the alarm will stop, the On-Battery icon will extinguish and the AC normal icon will illuminate.

LOW BATTERY WARNING

When the batteries reach the predetermined level, the alarm will sound two beeps every five seconds and the Battery Bar Graph will display the remaining battery capacity. This condition will continue until either AC returns or the UPS's self protection circuit shuts the UPS down to protect the battery from over discharging.

WEAK/BAD BATTERY

The UPS automatically tests the battery's condition. If the battery is weak, bad or disconnected, the Battery Capacity Bar Graph will flash and the alarm will sound three beeps every five minutes until the battery is either reconnected or replaced. This alarm will be repeated until the batteries pass a self-test. It is recommended that the UPS be allowed to charge overnight before performing a battery test to confirm a Weak/Bad Battery condition.

OVERLOAD

When the amount of load attached to the UPS exceeds its power rating, the Overload icon will illuminate and the alarm will sound continuously (AC and Battery modes). This alarm will remain on until the excess load is removed or the UPS's self protection circuit shuts the UPS down. To clear the overload alarm when the UPS has shutdown requires that the UPS perform a battery test. First remove part of the load, then turn the UPS on, the Overload icon and the alarm will be on. Second either use the Test Button or unplug the input power cord to perfom the battery test.

UPS FAULT

When the UPS detects an internal fault, "FAL" will be displayed on the LCD screen, the alarm will sound continuously and the output will be turned off. The fault condition, in some instances, may be reset by turning the UPS off and then on. If the fault condition does not clear the UPS must be sent in for service.

BATTERY OVER CHARGE PROTECTION

If the charger is providing too much voltage to the battery the UPS will turn off the charger to protect the battery. When the charger voltage exceeds 14.52V/battery the charger will turn off. The alarm will sound three beeps every five seconds and the Battery Capacity Bar Graph will flash. In some instances, the charger may be reset by turning the UPS off and then on. When the charger voltage exceeds 15.0V/battery the charger will turn off. The alarm will sound three beeps every five seconds and the Battery Capacity Bar Graph will flash. The UPS will automatically transfer to the battery mode and operate until the UPS shuts down due to battery exhaustion. The UPS must be sent in for service.

5 TROUBLESHOOTING

Symptom	Possible Cause	What To Do
UPS will not turn on	On/Off/Test button not pressed	Press, hold and then release the On/Off button to start UPS
UPS operates in battery mode only, even though there is normal AC present	Input AC circuit breaker is tripped	Reset circuit breaker by pressing the plunger back in. If the AC circuit breaker trips after UPS starts up, reduce the load on the UPS
"FAL" is displayed on the LCD	UPS has detected an internal fault	Call for service
The AC mode icon is illuminated, but there is no output	The UPS is being controlled via its communications port	Disconnect the computer cable from the UPS and press the On button. If UPS works normally, the software has control of the UPS
UPS does not provide expected runtime	The batteries may be weak or at the end of their useful service life	Charge the batteries for 8-hours and retest. If the runtime is still less than expected, the batteries may need to be replaced, even though the Weak/Bad Battery LED is not illuminated
The Battery Capacity Bar Graph is flashing	Loose connections at the batteries, Weak batteries, Bad batteries	Check battery connections, charge the batteries for 8-hours, replace the batteries
Overload icon is illuminated	The output load has exceeded the UPS's capacity	Check the specifications (see section 8). Remove part of the load
The AC mode icon is flashing and the alarm is silent	The UPS is operating in the Boost or the Buck mode	The UPS is performing its intended function
"S.L.F" is displayed on the LCD	The UPS has detected an improperly wired wall outlet.	Contact a Qualified Electrician to correct the problem.

6 REPLACING THE BATTERY

REPLACING THE BATTERY

(QUALIFIED SERVICE PERSONNEL ONLY)

Please read all of the **WARNINGS** and **CAUTIONS** before attempting to service the batteries. Typical battery life is 3 to 5 years. Environmental factors do affect battery life. High temperatures, poor utility power, and frequent, short duration discharges have a negative impact on battery life.

WARNING! This UPS contains potentially hazardous voltages. Do not attempt to disassemble the UPS beyond the battery replacement procedure. This UPS contains no user serviceable parts. Repairs and battery replacement must be performed by **QUALIFIED SERVICE PERSONNEL ONLY.**

CAUTION: Do not open or mutilate batteries. Released electrolyte is harmful to the skin and eyes and may be toxic.

CAUTION: Do not dispose of batteries in a fire. The batteries may explode. The batteries in this UPS are recyclable. Dispose of the batteries properly. The batteries contain lead and pose a hazard to the environment and human health if not disposed of properly. Refer to local codes for proper disposal requirements or return the battery to the supplier.

CAUTION: Although the battery system voltage is only 24VDC and 36VDC the battery system can still present a risk of electrical shock. These batteries produce sufficient current to burn wire or tools very rapidly, producing molten metal. Observe these precautions when replacing the batteries:

1. Remove watches, rings, or other metal objects.
2. Use hand tools with insulated handles.
3. Wear protective eye gear (goggles), rubber gloves and boots.
4. Do not lay tools or other metal parts on top of batteries.
5. Disconnect the charging source prior to connecting or disconnecting the battery terminals.
6. Determine if the battery is inadvertently grounded. If the battery is, remove the source of the grounding. Contact with any part of a grounded battery can result in an electrical shock. The likelihood of such shock will be reduced, if such grounds are removed during installation and maintenance.

CAUTION: Replace batteries with the same number and type as originally installed in the UPS. These batteries have pressure operated vents. These UPSs contain sealed non-spillable maintenance-free lead acid batteries.

Model #	PRO1000RT	PRO1500RT
Battery Qty/Rating	2-12V9Ah	3-12V9Ah
First Power Part #	FP1290	FP1290
Ritar Part #	RT1290	RT1290
CSB Part #	HR1234W	HR1234W
Panasonic Part #	UP-RW1245P	UP-RW1245P
Yuasa Part #	REW45-12	REW45-12

BATTERY REPLACEMENT PROCEDURE

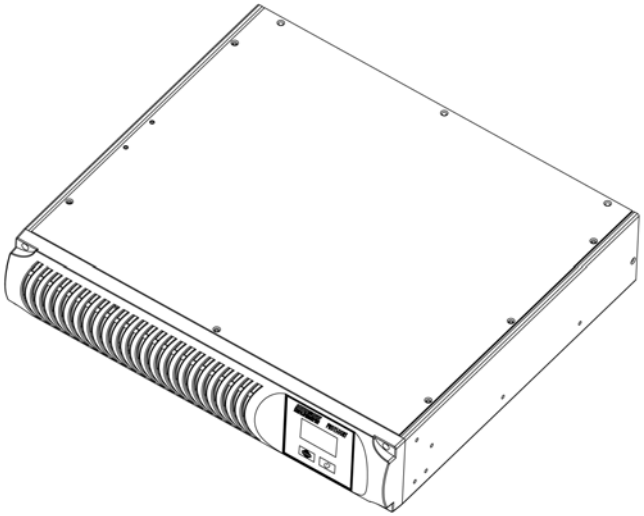
PLEASE READ THE CAUTIONS AND WARNINGS BEFORE ATTEMPTING TO REPLACE THE BATTERIES

Hot-swappable batteries mean that the batteries can be replaced without powering down the whole UPS system.

NOTE: If there is a power interruption while replacing the hot-swappable batteries, with the UPS on, the load will not be backed up. To hot-swap the batteries start with step number 6.

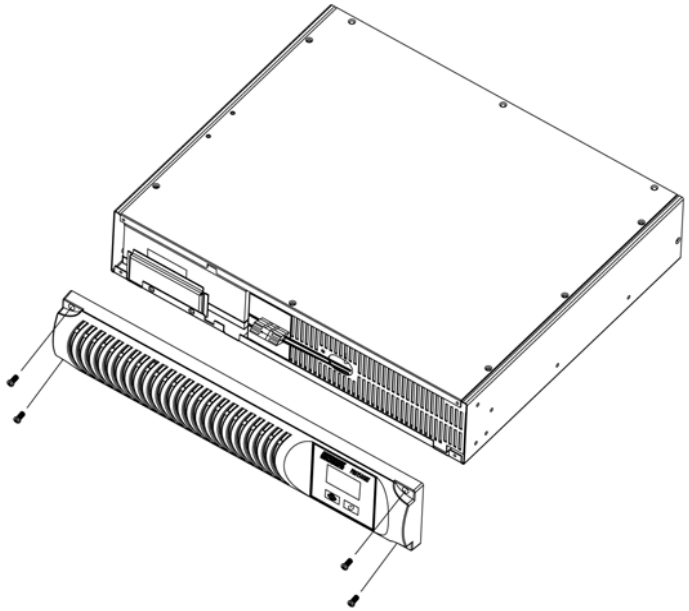
1. Turn off the equipment that is plugged into the output of the UPS.
2. Press the On/Off/Test Button on the front panel to turn the UPS off.
3. Unplug the UPS's AC power cord from the AC wall outlet.
4. Unplug the equipment from the output receptacles of the UPS.
5. Unplug the computer interface cable from the rear panel of the UPS.

FIG. 1



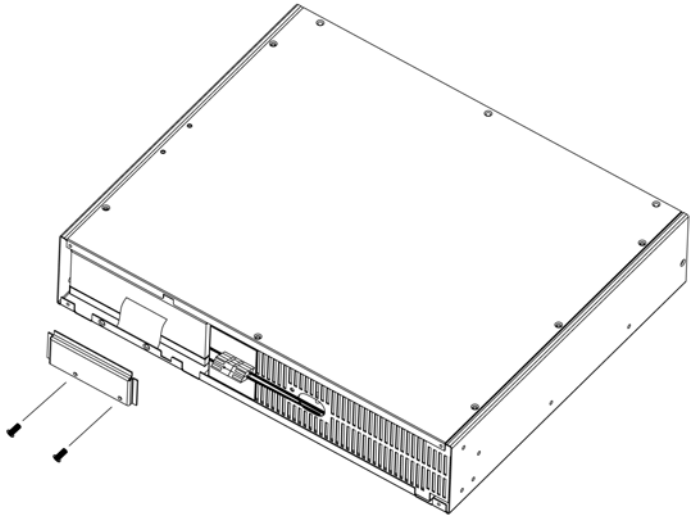
6. Remove the front panel retaining screws. (FIG. 2)
7. Lay the front panel on top of the UPS.

FIG. 2



8. Remove the two retaining screws for the battery retaining bracket. (FIG. 3)
9. Remove the battery retaining bracket.

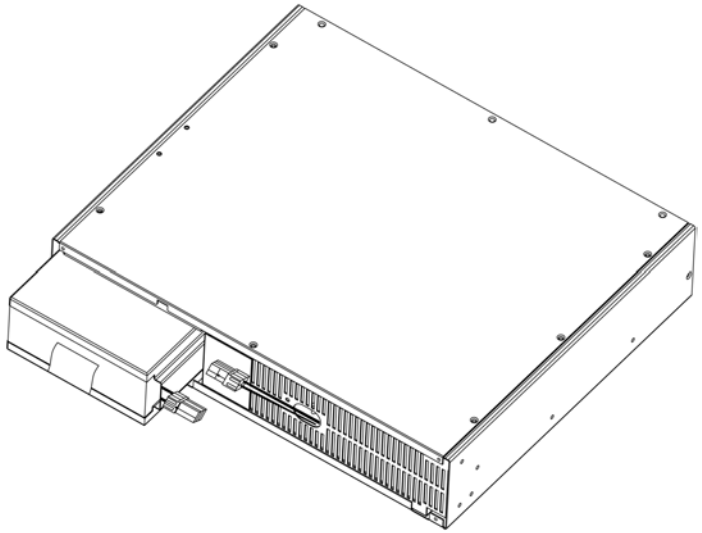
FIG. 3



10. Disconnect the Battery connectors (red and black). (FIG. 4)
11. Grasp the battery pull tab and gently pull the battery module out of the UPS and set aside.

NOTE: Use Caution, the battery module is heavy.

FIG. 4



12. Slide the new battery module into the UPS.
13. Re-install the battery retaining bracket.
14. Re-install the two retaining screws for the battery retaining bracket.
15. Verify proper polarity. Reconnect the battery connectors (red and black).

NOTE: Some sparking might occur, this is normal.

16. Re-install the front panel on the UPS.
17. Re-install the front panel retaining screws.
18. Properly dispose of the old batteries at an appropriate recycling facility or return them to the supplier in the packing material for the new batteries.
19. The UPS is now ready for the normal operation.

NOTE: If the UPS has a Weak/Bad Battery Alarm after replacing the batteries, the user must initiate a self-test to clear the Weak/Bad Battery Alarm. To initiate a self-test see section 4 "**TEST BUTTON**".

7 OBTAINING SERVICE

IF THE UPS REQUIRES SERVICE

1. Use the **TROUBLESHOOTING** section to eliminate obvious causes.
2. Verify there are no circuit breakers tripped. A tripped circuit breaker is the most common problem.
3. Call your dealer for assistance. If you cannot reach your dealer, or if they cannot resolve the problem call or fax the Technical Support department at the following numbers; Voice phone (972) 446-7363, FAX line (972) 446-9011 or contact Minuteman UPS at mmsupport@minutemanups.com.
   Please have the following information available BEFORE calling the Technical Support Department.
   A. Your name and address.
   B. Where and when the unit was purchased.
   C. All of the model information about your UPS.
   D. Any information on the failure, including LEDs that may be illuminated.
   E. A description of the protected equipment, including model numbers if possible.
   F. A technician will ask you for the above information and, if possible, help solve your problem over the phone. In the event that the unit requires factory service, the technician will issue you a Return Material Authorization Number (RMA #).
   G. If the UPS is under warranty, the repairs will be done at no charge. If not, there will be a charge for repair.
4. Pack the UPS in its original packaging. If the original packaging is no longer available, ask the Technical Support Technician about obtaining a new set. It is important to pack the UPS properly in order to avoid damage in transit. Never use Styrofoam beads for a packing material.
   A. Include a letter with your name, address, day time phone number, RMA number, a copy of your original sales receipt, and a brief description of the problem.
5. Mark the RMA # on the outside of all packages. The factory cannot accept any package without the RMA # marked on the outside.
6. Return the UPS by insured, prepaid carrier to:

Para Systems Inc.
MINUTEMAN UPS
1455 LeMay Drive
Carrollton, TX 75007
ATTN: RMA # _____

8 SPECIFICATIONS

SYSTEM SPECIFICATIONS		
Model Number	PRO1000RT	PRO1500RT
Topology	Line-Interactive, Simulated Sine Wave	
Maximum Power Capacity	1000VA 700W	1500VA 1050W
INPUT		
Number of Phase	Single (1∅ 2W +G)	
Nominal Voltage	120VAC	
Acceptable Input voltage	0 - 160VAC	
Voltage Range	90 - 150VAC	
Frequency Limits	50 or 60 Hz, +/-5Hz, autosensing	
Low Voltage Transfer Point	90V resets to Utility Power at 94V or higher	
High Voltage Transfer Point	150V resets to Utility Power at 146V or lower	
Input Protection	Resettable Circuit Breaker	
OUTPUT NON-BATTERY OPERATION		
Voltage Range	104 - 132VAC	
Voltage Regulation	120VAC: -13.3% - +10.0%	
Frequency Range	60Hz: 55 - 65Hz or 50Hz: 45 - 55Hz	
Efficiency (Line Mode)	>90% (Full Load)	
OUTPUT BATTERY OPERATION		
Waveform Type	Simulated Sine Wave (Step Wave)	
Nominal Voltage	120VAC	
Voltage Regulation	Nominal +/-5% (until Low Battery Warning)	
Frequency	50/60Hz, +/-0.5Hz (unless synchronized to utility)	
Transfer Time	6 ms Typical	
Overload Capacity	AC Mode: 110% for 5-seconds then fault, 120% Shutdown Immediately DC Mode: 110% for 10-seconds then shutdown, 120% Shutdown Immediately	
Protection	Over-Current, Short-Circuit Protected and Latching Shutdown	
REGULATORY COMPLIANCE		
Safety and Approvals	cTUVus (conforms to UL1778, CSA 22.2 standards)	
EMC Verification	FCC Class B, CE certified	

BATTERY SYSTEM		
Battery Type	Sealed, Non-Spillable, Maintenance Free, Value Regulated Lead Acid	
Typical Recharge Time	From Full load dishcarge: 4-hours to 80%, 8-hours to 90%	
Typical Battery Life	3 to 5 years. Environmental factors do affect battery life. High temperatures, poor utility power, and frequent, short duration discharges have a negative impact on battery life.	
System Voltage	24VDC	36VDC
Battery: Quantity/Rating	2-12V9Ah	3-12V9Ah
Runtime: Half Load (minutes)	17	17
Runtime: Full Load (minutes)	5	5
SURGE PROTECTION AND FILTERING		
Surge Energy Rating	1140 J	
Surge Current Capability	6500 Amps total	
Surge Response Time	0 ns (instantaneous) normal mode; <5 ns common mode	
Surge voltage let-through (as a percentage of an applied ANSI C62.41 Cat. A +/-6 kV)	< 5%	
10/100 Base-T surge protection let-through (as a percentage of an applied +/-6 kV 1.2/50 us, 500 a 8/20 uS test)	< 5%	
Telephone line surge protection let-through (as a percentage of an applied +/-6 kV 1.2/50 us, 500a 8/20 uS test)	< 1%	
Noise Filter	normal and common mode EMI/RFI suppression	
Audible Noise at 1 m (3 ft.)	<45 dBA	
ENVIRONMENTAL		
Operating Temperature Operating Elevation	0 to 40 degrees C (+32 to +104 degrees F) at 0 to 1,500m (0 to +5,000 ft)	
Operating Temperature Operating Elevation	0 to 35 degrees C (+32 to +95 degrees F) at 1501 to 3,000m (0 to +10,000 ft)	
Storage Temperature	-15 to +45°C (+5 to +113°F)	
Operating/Storage Humidity	95% Non-Condensing	
Storage Elevation	0 to 15,000m (0 to +50,000 ft)	
PHYSICAL		
Size - Net L X W X H	15.7 x 17.3 x 3.5" 398 x 440 x 89 mm	
Weight - Net	35.1 lbs 15.9 Kgs	43.0 lbs 19.5 Kgs
Size - Shipping L X W X H	20.7 x 21.9 x 8.5" 526 x 555 x 215 mm	
Weight - Shipping	40.8 lbs 18.5 Kgs	48.5 lbs 22.0 Kgs

LIMITED PRODUCT WARRANTY

Para Systems, Inc. (Para Systems) warrants this equipment, when properly applied and operated within specified conditions, against faulty materials or workmanship for a period of three years from the date of purchase. For equipment sites within the United States and Canada, this warranty covers repair or replacement of defective equipment at the discretion of Para Systems. Repair will be from the nearest authorized service center. The customer pays for shipping the unit to Para Systems. Para Systems pays ground freight to ship the unit back to the customer. Replacement parts and warranty labor will be borne by Para Systems. For equipment located outside of the United States and Canada, Para Systems only covers faulty parts. Para Systems products repaired or replaced pursuant to this warranty shall be warranted for the unexpired portion of the warranty applying to the original product. This warranty applies only to the original purchaser who must have properly registered the product within 10 days of purchase.

The warranty shall be void if (a) the equipment is damaged by the customer, is improperly used, is subjected to an adverse operating environment, or is operated outside the limits of its electrical specifications; (b) the equipment is repaired or modified by anyone other than Para Systems or Para Systems approved personnel; or (c) has been used in a manner contrary to the product's User's Manual or other written instructions.

Any technical advice furnished before or after delivery in regard to use or application of Para Systems's equipment is furnished without charge and on the basis that it represents Para Systems's best judgment under the circumstances, but it is used at the recipient's sole risk.

EXCEPT AS PROVIDED HEREIN, PARA SYSTEMS MAKES NO WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. Some states do not permit limitation of implied warranties; therefore, the aforesaid limitation(s) may not apply to the purchaser.

EXCEPT AS PROVIDED ABOVE, IN NO EVENT WILL PARA SYSTEMS BE LIABLE FOR DIRECT, INDIRECT, SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OF THIS PRODUCT, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE. Specifically, Para Systems is not liable for any costs, such as lost profits or revenue, loss of equipment, loss of use of equipment, loss of software, loss of data, cost of substitutes, claims by third parties, or otherwise. The sole and exclusive remedy for breach of any warranty, expressed or implied, concerning Para Systems's products and the only obligation of Para Systems hereunder, shall be the repair or replacement of defective equipment, components, or parts; or, at Para Systems's option, refund of the purchase price or substitution with an equivalent replacement product. This warranty gives you specific legal rights and you may also have other rights which vary from state to state.

No employee, salesman, or agent of Para Systems is authorized to add to or vary the terms of this warranty.

A1. DECLARATION OF CONFORMITY

Application of Council Directive(s): 89/336/EEC, 73/23/EEC

Standard(s) to which Conformity is declared: EN55022, EN55024
EN61000-6-1, EN61000-6-3
EN61000-4-5

Manufacturer's Name: Para Systems, Inc. (MINUTEMAN UPS)

Manufacturer's Address: 1455 LeMay Drive
Carrollton, Texas 75007 USA

Type of Equipment: Uninterruptible Power Supplies (UPS)
Model No: PRO1000RT, PRO1500RT

Year of Manufacture: Beginning November 1, 2009

I hereby declare that the equipment specified above conforms to the above Directive(s).

Robert Calhoun (Name)

Manager Engineering (Position)

Place: Carrollton, Texas, USA

Date: November 1, 2009

Notes:

Notes: